UNDERSTANDING HSBC UK'S CUSTOMER INSIGHTS TO IMPROVE SERVICES DELIVERY USING TEXT MINING AND SENTIMENTAL ANALYSIS

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I.   Methodology

Data collecting and pre-processing

304 customer reviews on HSBC UK's services are retrieved from website TrustPilot and ConsumerAffairs. These reviews varies from 2018 to 2022 and five-point scale ratings, in which 1 being extremely dissatisfied, and 5 being extremely satisfied. The sampling method is random selection, however the proportions of reviews by ratings and years within samples resemble that of the whole population.

After the collection and before the text analysis, NVivo is used to clean the corpus by eliminating stop words and irrelevant nouns, stemming, and determining the most frequent keywords.

Text-mining and analysis

In this stage, review contents are classified based on main discussed topics, including the quality of customer support, bank accounts and cards services, transactions, scams and fraudulent, and internet banking and apps. MonkeyLearn, a web-based AI-powered system, is used to classify customer reviews into appropriate themes with human judgement and supervised data training.

Additionally, sentiment analysis is conducted to extract underlying attitudes and emotions of customers using Microsoft Azure.

Analysis results are visualised by Tableau. Finally, after the patterns, themes, and tones of the customer reviews are identified and compared between groups, the analysis results will be discussed in light of customer services enhancement and applications in business operations.

Limitations

During the data collection process, it is observed that several reviews are rated 5-star, however the review content implies dissatisfaction. This is a challenge for machines to decode human's languages as algorithms could not distinguish figurative speech such as sarcasm, double negatives, slangs, dialect variations, idioms, and ambiguity.

II.   Text mining and content analysis

Overall, according to statistics of TrustPilot and ConsumerAffairs, the average rating of HSBC UK is 1.8 out of 5 (Fig. 1). Only 8% of customers evaluate their experiences at HSBC UK as extremely satisfied (5-star rating), meanwhile, a majority of customers (77%) find HSBC UK's services dissatisfied. Moreover, even though the number of reviews has been increasing over time, the number of 1-star reviewers is still exponentially larger than other reviewers (Fig. 2).
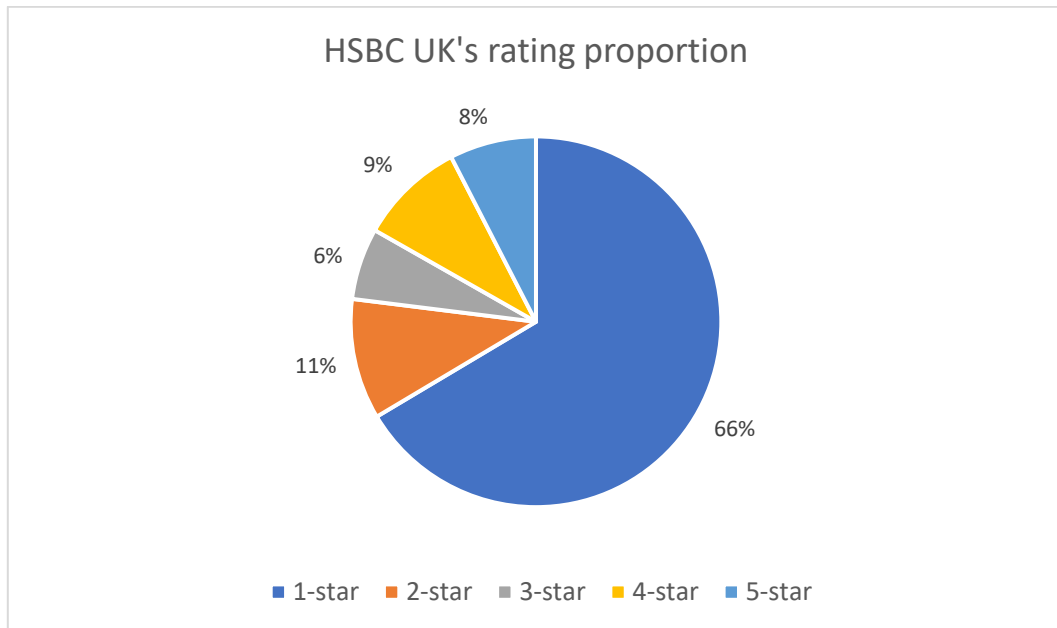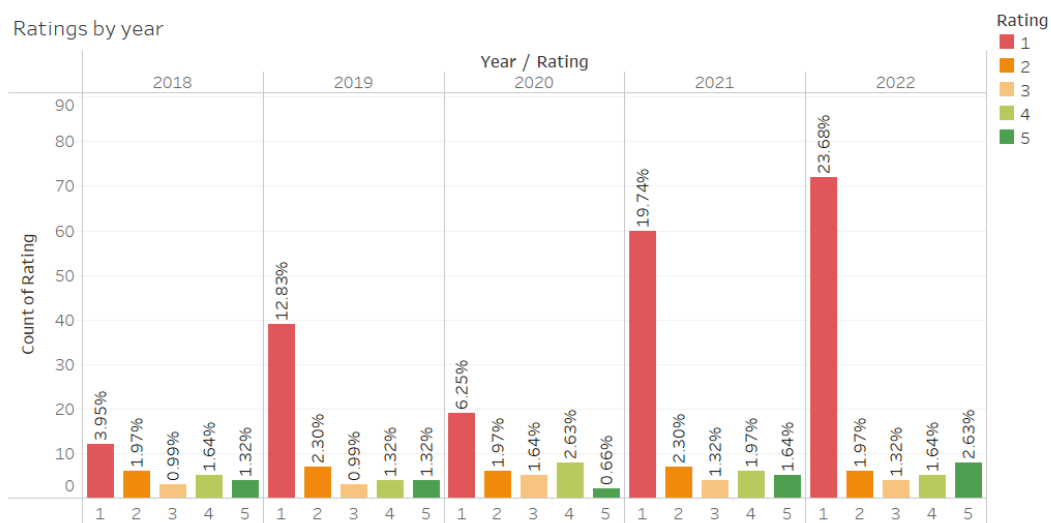

Figure 1 HSBC UK's rating proportion

Figure 2 Customers' rating by years

Most frequent words in customer reviews

As Table 1 summarises, both negative and positive reviews of HSBC's services are related to nouns "account", "call", "customer service", "card" and "online" and adjectives "good" and "worst". Overall, customers mainly discuss regarding banking accounts and customer services, in which positive reviewers recommend HSBC for their helpful staff and, meanwhile other negative reviewers mention their problems with HSBC regarding poor services, accounts and cards, transaction failures, mobile app, and scams.

Table 1 Common stems and frequencies in customer reviews

Rank	Common stems	Count	Weighted Percentage (%)	Similar Words
1	account	442	3.03	account, accountant, accountants, accounts
2	call	231	1.58	call, called, calling, calls
3	customer	202	1.38	customer, customers, customers'
4	service	186	1.27	service, services
5	card	164	1.12	card, card', cards
6	money	157	1.08	money, money'
7	online	154	1.05	online
8	phone	149	1.02	phone, phone#, phoned, phones, phoning
9	branch	121	0.83	branch, branches
10	wait	107	0.73	wait, waited, waiting, waits
11	helping	101	0.69	help, helped, helpful, helping, helps
12	busy	89	0.61	business, businesses, busy
13	opening	87	0.6	open, 'open, opened, opening, opens
14	closing	73	0.5	close, closed, closes, closing
15	apps	70	0.48	app, apps, 'apps'
16	credit	70	0.48	credit, credited
17	issue	68	0.47	issue, issued, issues
18	staff	68	0.47	staff, staffs
19	security	67	0.46	secure, security
20	transfer	65	0.45	transfer, transfer', transfered, transferred, transferring, transfers
21	received	64	0.44	receive, received, receiving
22	transactions	61	0.42	transact, transacting, transaction, transactions
23	payment	55	0.38	payment, payments
24	fraud	49	0.34	fraud, frauded, frauds
25	telephone	49	0.34	telephone, telephoned, telephoning
26	access	48	0.33	access, accessible, accessing
27	paying	47	0.32	pay, paying, pays
28	chat	46	0.32	chat, chat', chats, chatting
29	good	44	0.3	good
30	worst	44	0.3	worst

Relationships among the most frequent words

The word cloud visualises the most frequently mentioned words in customers' reviews (Fig. 3). In colour red are words with the most counts and have the most linkages to other words (Fig. 4). These links also imply possibly co-occurrences in these words.

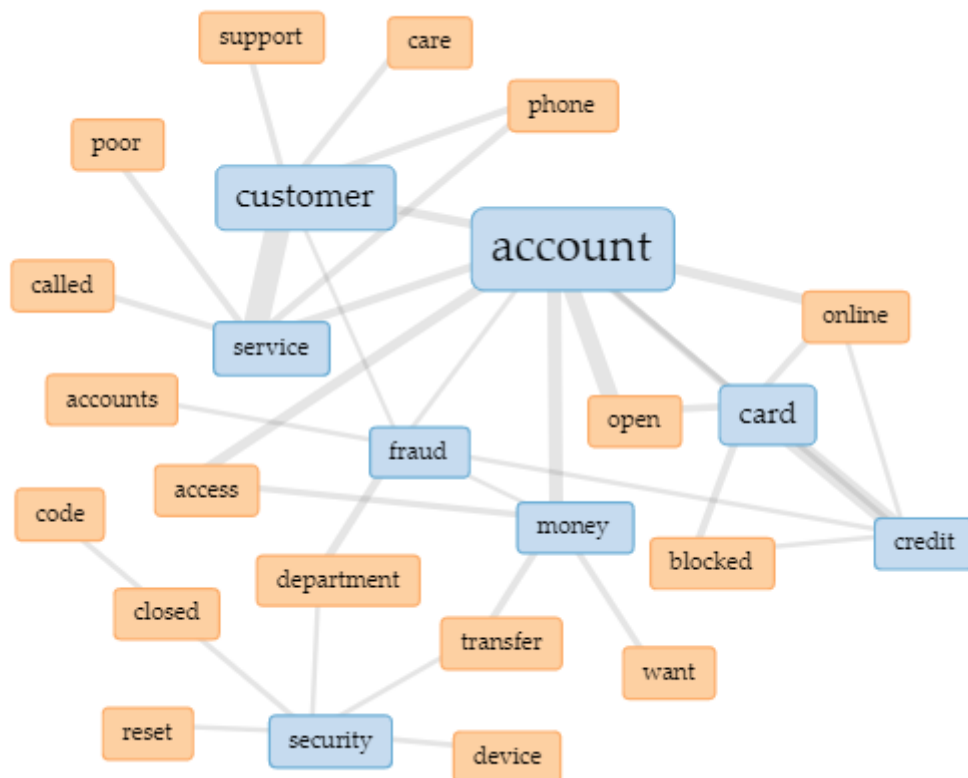*Figure 3 Word cloud of HSBC's customer reviews*

Figure 4 Term link of HSBC's customer reviews

As observed in Fig. 5 and 6, multiple tokens which are linked as identified in Fig. 5 also share similarities in occurrence distribution trends. This means that when a token's frequency across the scopus segments changes, the frequencies of linked tokens also witness the same trend in changes. In other words, when a customer mentions account, there is a likelihood they will mention 'open' and 'money' as well (Fig. 5), which could be under the circumstance of clients opening a bank account to deposit their money. It can be interpreted likewise for 'customer', 'service', 'phone' and 'call' (Fig. 6) as in clients looking for customer services through phone call.
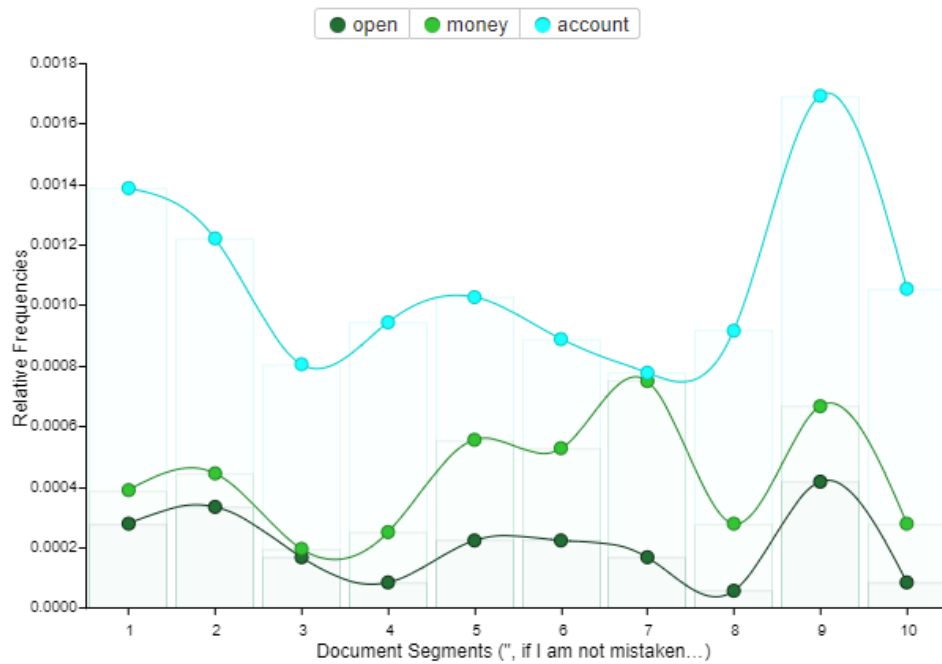

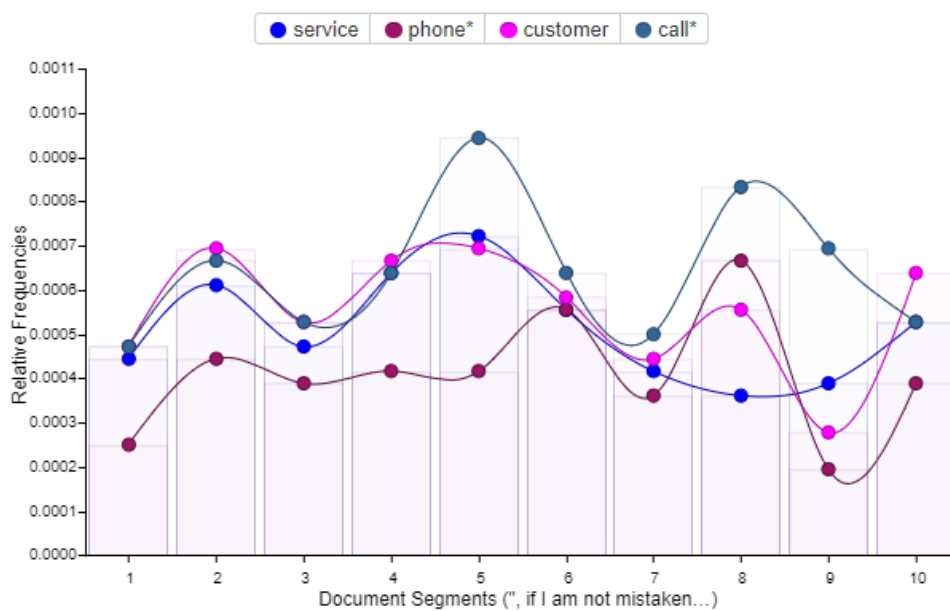*Figure 5 Occurrence distributions of 'open', 'money', and 'account*

Figure 6 Occurrence distributions of 'service', 'phone', 'customer', and 'account'

Themes analysis

5 main discussed topics and most frequent words of each topic are identified as follows:

Table 2 Most frequent words in customers' reviews by main discussed topics

| Rank	Accounts and cards	Customer services	Online banking & App	Payments and transactions	Security and Fraudulent
1	account	account	app	account	fraud
2	card	customer	online	money	customer
3	call	calls	security	call	help
4	money	service	account	customer	transaction
5	open	phone	mobile	business	card
6	online	online	code	help	called
7	branch	wait	phone	friend	person
8	credit	branch	card	drug	service
9	phone	helpful	transfer	online	money
10	service	staff	money	payment	account
11	customer	money	generate	review	companies
12	received	busy	issues	client	going
13	closed	card	payments	funds	quick
14	waiting	closing	working	laundering	scammed
15	business	chat	good	transactions	seem
16	pay	issue	key	branch	agent
17	transaction	telephone	locked	feel	bad
18	issues	worst	using	open	better
19	transfer	system	customer	services	blocked
20	fraud	thing	login	transfer	due
21	helps	access	user	ask	fake
22	since	received	worst	cash	far
23	review	transfer	help	chat	international
24	security	email	access	contacted	issues
25	check	security	credit	copy	online
26	apply	understand	different	crooked	operate
27	debit	experience	difficult	international	password
28	department	payment	digital	offer	pay
29	information	app	experience	staff	protect
30	provide	company	far	start	purchase
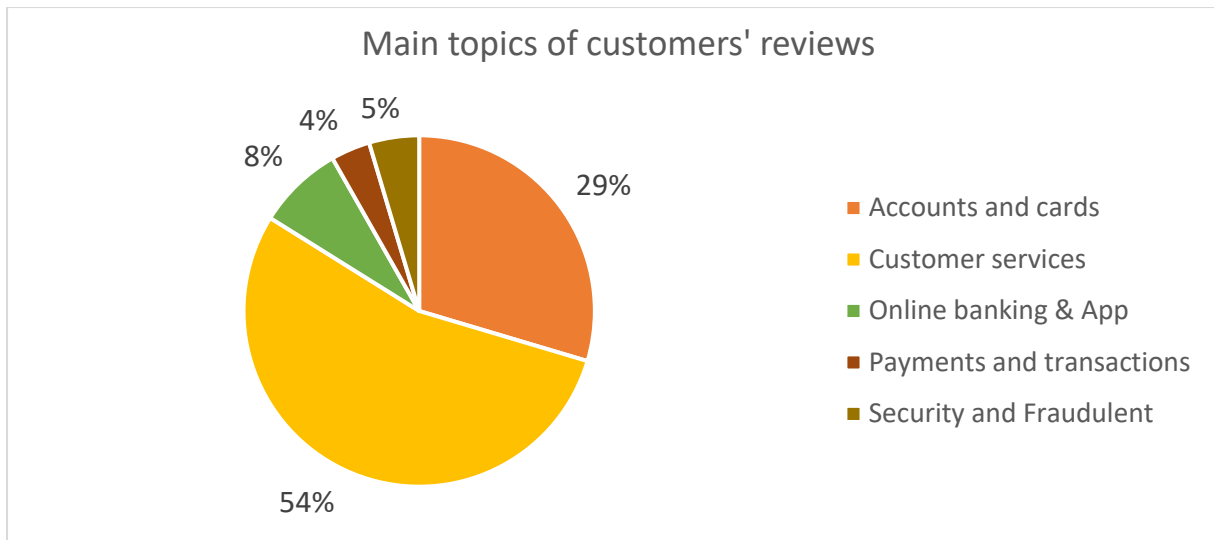
Figure 7 Main discussed topics proportions
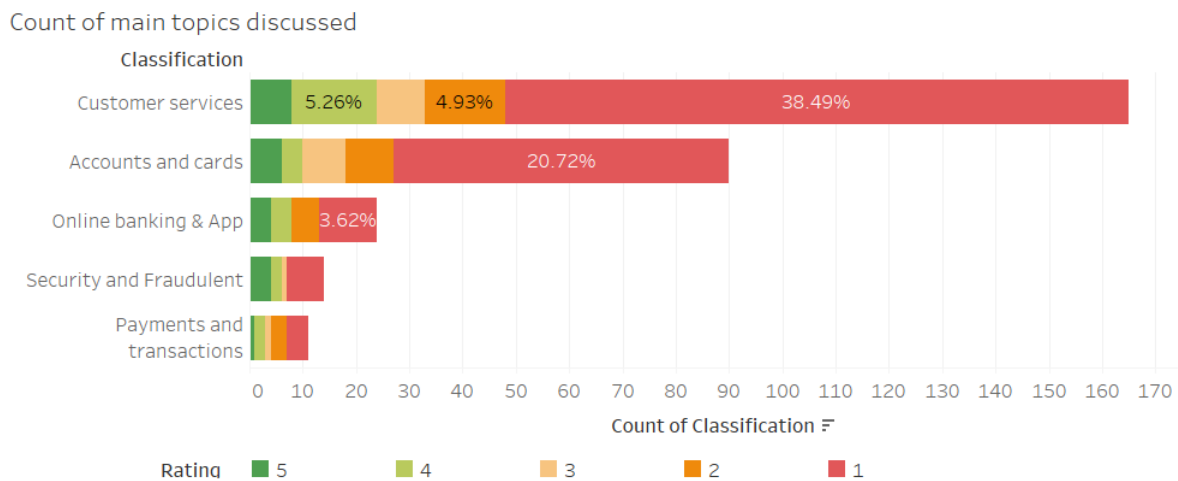
Figure 8 Rating percentages by main topics

The largest attribute to customers' dissatisfaction is customer services, as 54% clients reviewed this (Fig. 7), in which about 38% of total customers gave HSBC 1 star for their services (Fig. 8). A remarkable number of clients share the same thought of HSBC UK has the worst customer services. Most clients had similar experiences of seeking support from customer services through telephone calls and email but had to wait for a long time and normally did not receive helpful assistance from the staff either. It can be interpreted from the most common tokens of this topic is that the issues they had related to card payments, online access to their accounts via mobile app and security. Regardless of which issues these customers had, they all emphasized on poor customer services.

29% of total reviewers mention their accounts and cards, in which over 20% had struggles either to apply, open, or access their current accounts via mobile app, saying that was their worst experience. Other cases are some clients claimed that the bank closed or blocked their accounts with little to no explanation and causing their money to be freezing, including business clients and their operations were affected. Another popular reason is that clients claimed bank staff convinced them into opening a new account by promising an invalid promotional. Some others have problems with card transactions and account deposits. In general, besides the main problem with their accounts, customers felt dissatisfied as customer services did not provide appropriate support.

Clients reviewing online banking, mobile apps, payments and transactions, and securities and fraudulent only made up a minority of 17% total reviews analysed.
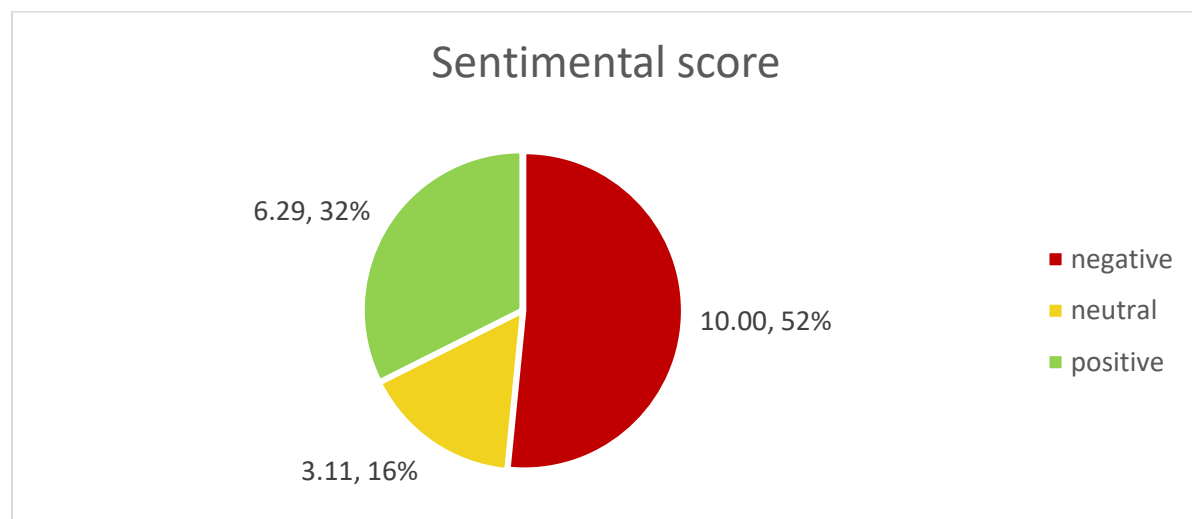
Sensitivity Analysis

Figure 9 Sentimental score values and proportions

Within 304 reviews, negative reviews have total score of 10, making up 52% of the total score, followed by positive reviews with the score of 6.29 (32%) and finally neutral reviews with the smallest score of 3.11 (16%) (Fig. 9).

Fig. 10 shows that about 44% clients had negative attitude towards customer services and bank account issues. However, the major positive reviews are also about customer services and online banking and mobile app.
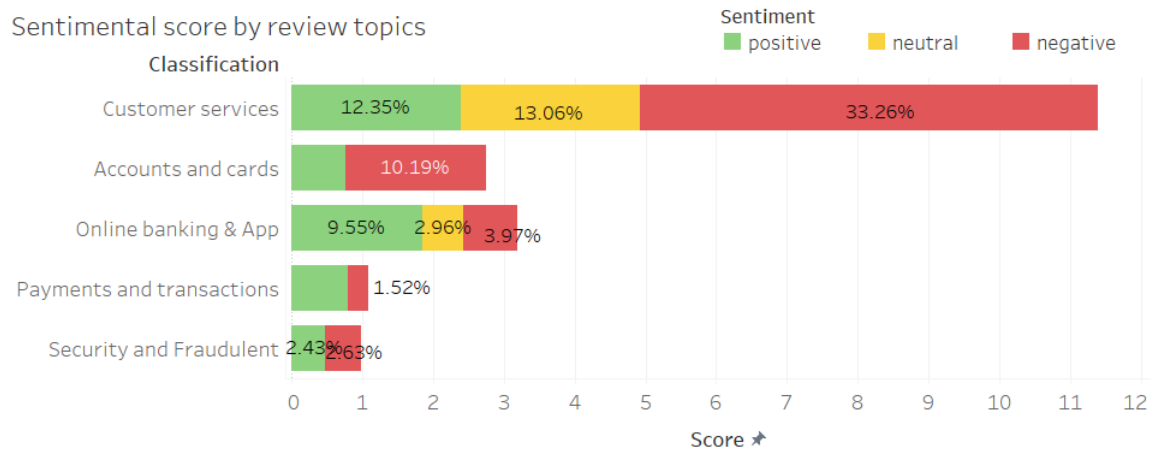

Figure 10 Sentimental score by topics

Within the period from 2018 to 2020, the number of negative reviews and positive reviews both have the tendency to increase meanwhile that of neutral reviews increased in 2020 but have been decreasing from 2021 to 2022 (Fig 10).

Figure 11 Sentiment score over 5 years

Fig. 12 and Fig. 14 illustrate the most frequent words mentioned in positive reviews and negative reviews. Both types of review share common topics customer services. In addition, clients were satisfied with the customers' services because of the friendly, helpful and polite staff that gave them great experience. On the other hand, clients were often dissatisfied when they had poor experiences with bank accounts, closed cards, and long waiting time.
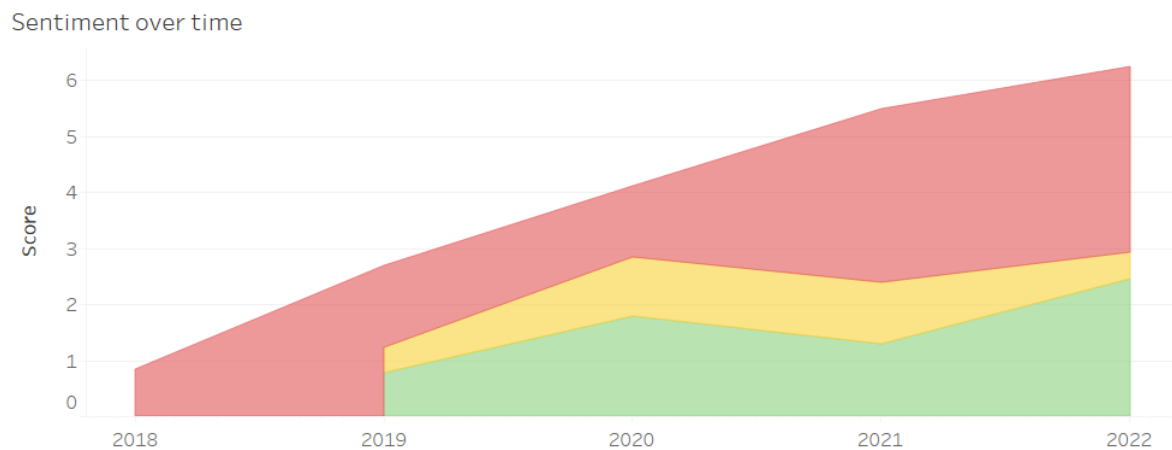

Figure 12 Top positive keywords

Figure 13 Top negative keywords

Discussions

In summary, the major problems resulting in low customers' satisfaction towards HSBC Bank UK's services lie heavily within their customers care and misunderstanding between the bank and clients about rules and regulations of account opening and maintenance. This could have significant impacts on clients' patronage intention, and business image and their perceived value.

A consumer's intention to revisit the business place can be influence by their previous experiences. In the case of HSBC bank UK, 77% clients used their services expressed their dissatisfaction in the bank's customer services (Fig. 1), which implies a great likelihood that they will not use the bank's services in the future. In fact, text analysis results show that HSBC's clients gave warning not to open bank accounts or using any services at HSBC as they perceived the customers' services were 'the worst'.

III.   Conclusion and Recommendations

The findings show that approximately 77% customers have a dissatisfied experiences with HSBC's services. Moreover, the negative opinions account for 52% customers' sentiment. The analysis reveals that reasons behind customers' dissatisfaction are mainly from poor customer services, in which customers claimed that they had poor experiences with bank accounts, online banking and app usages, security and fraudulent as well as payments issues.

From everything that mentioned above, it's clear that the perception of customers towards the bank directly correlates to how the bank's public reputation is perceived and how said bank performs. Within the context of the sentiment analysis, that was conducted above, there are 5 constructive recommendations that may prove beneficial for HSBC to improve their customers' satisfaction towards the bank.

The first recommendation for the application of this analysis is to improve social media monitoring. In this day and age, social media is the fastest method of communication that connects directly from a bank to its users, and within this medium, customers can freely express their thoughts and opinions about the bank. By improving this aspect of communication, HSBC can better represent themselves publicly and able to control their branding's narrative more effectively.

Applying social media monitoring is the beginning step before HSBC can then improve their customers' interaction as well as their branding. These 3 steps go hand-in-hand, for an improvement in one aspect translates to improvement to all. To quote the Sentiment Analysis Guide, "Social media and brand monitoring offer us immediate, unfiltered, and invaluable information on customer sentiment". By having a better and more immediate interaction with the customer, bank can conduct qualitative research in the form of surveys or interviews, in order to acquire important and honest feedbacks. These feedbacks are what would eventually shape a brand's public perception, hence the importance of brand monitoring to not only keep track, but also to dictate the perception.